



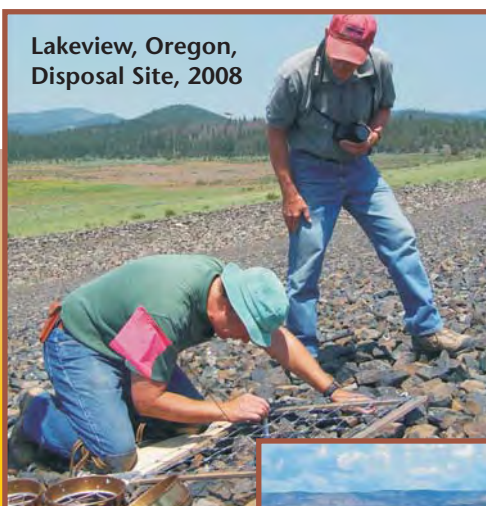
U.S. DEPARTMENT OF
ENERGY

Office of
Legacy Management

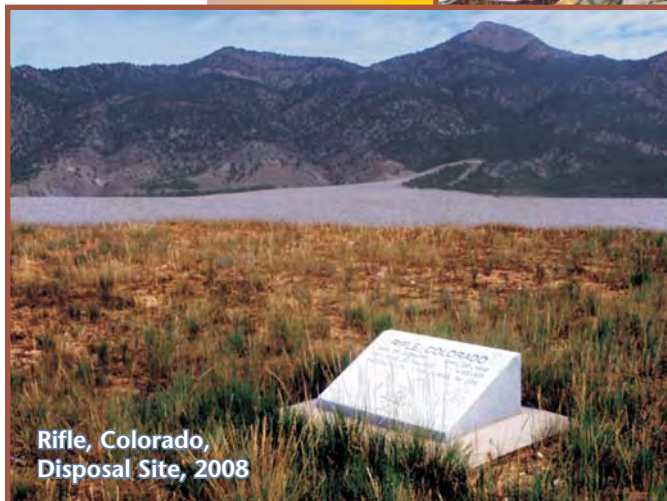
2008 Annual Site Inspection and Monitoring Report for Uranium Mill Tailings Radiation Control Act Title I Disposal Sites

January 2009

Lakeview, Oregon,
Disposal Site, 2008



Rifle, Colorado,
Disposal Site, 2008



Grand Junction, Colorado,
Disposal Site, 2008



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**U.S. Department of Energy
Office of Legacy Management**

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Uranium Mill Tailings Radiation Control Act
Title I Disposal Sites**

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Abbreviations

ACL	alternate concentration limit
ATV	all terrain vehicle
BLM	U.S. Bureau of Land Management
CFR	<i>Code of Federal Regulations</i>
cm/s	centimeter(s) per second
COC	Constituent of Concern
CPDES	Colorado Pollutant Discharge Elimination System
CSL	compacted soil layer
D ₅₀	mean diameter
DOE	U.S. Department of Energy
EnergySolutions	EnergySolutions Inc.
GCAP	Groundwater Compliance Action Plan
GPS	global positioning system
LLRW	low-level radioactive waste
LM	Office of Legacy Management
LTSP	Long-Term Surveillance Plan
MCL	maximum concentration limit
mg/L	milligram(s) per liter
MSL	mean sea level
NECA	Navajo Engineering and Construction Authority
NRC	U.S. Nuclear Regulatory Commission
PL	photograph location
POC	point of compliance
POE	point of exposure
Rio Algom	Rio Algom LLC
RRM	residual radioactive material
TDS	total dissolved solids
Umetco	Umetco Minerals Corporation
UMTRCA	Uranium Mill Tailings Radiation Control Act of 1978 (88 USC 7901, <i>et seq.</i>)

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Executive Summary

This report, in fulfillment of a license requirement, presents the results of long-term surveillance and maintenance activities conducted by the U.S. Department of Energy (DOE) Office of Legacy Management (LM) in 2008 at 19 uranium mill tailings disposal sites established under Title I of the Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978.¹ These activities verified that the UMTRCA Title I disposal sites remain in compliance with license requirements.

DOE operates 18 UMTRCA Title I sites under a general license granted by the U.S. Nuclear Regulatory Commission (NRC) in accordance with Title 10 *Code of Federal Regulations* Part 40.27 (10 CFR 40.27). The Grand Junction, Colorado, Disposal Site, one of the 19 Title I sites, will not be included under the general license until an open, operating portion of the cell is filled and closed, which is projected to occur in 2023. This site is inspected in accordance with an interim Long-Term Surveillance Plan (LTSP).

Long-term surveillance and maintenance services for these disposal sites include inspecting and maintaining the sites; monitoring environmental media and institutional controls; conducting any necessary corrective actions; and performing administrative, records, stakeholder-services, and other regulatory stewardship functions.

Annual site inspections and monitoring are conducted in accordance with site-specific LTSPs and procedures established by DOE to comply with license requirements. Each site inspection is performed to verify the integrity of visible features at the site; to identify changes or new conditions that may affect the long-term performance of the site; and to determine the need, if any, for maintenance, follow-up or contingency inspections, or corrective action. LTSPs and site compliance reports are available on the Internet at <http://www.lm.doe.gov/>.

All of the sites require some degree of routine monitoring and maintenance, which may include groundwater and surface water monitoring, minor erosion control, vegetation and noxious weed control, fence and gate repairs, sign replacement, and minor trash removal. The following nonroutine activities² occurred in 2008:

- Canonsburg, Pennsylvania—NRC concurred in the revised LTSP; monitoring program modifications will be implemented in 2009.
- Canonsburg, Pennsylvania—DOE completed the stream bank stabilization project along Chartiers Creek.
- Canonsburg, Pennsylvania—NRC approved DOE's request for concurrence in the sale of a portion of the disposal site situated between Area C and the railroad (i.e., the east end of Tract 117).
- Durango, Colorado—Criteria for permanent closure of the transient drainage water collection and treatment system was met (e.g., the water level in the disposal cell dropped, and water is no longer being withdrawn and treated).

¹ Congress directed that the Moab, Utah, Processing Site be remediated under Title I of UMTRCA. This site eventually will become the 20th Title I disposal site.

² Nonroutine activities are activities implemented in response to changes in site conditions, regulatory setting, or management structure following a regulatory compliance review.

- Durango, Colorado—DOE is evaluating increased uranium concentrations downgradient of the transient drainage collection and treatment system prior to system decommissioning.
- Falls City, Texas—NRC concurred in the revised LTSP, and DOE implemented the associated modifications to the groundwater monitoring program.
- Grand Junction, Colorado—DOE continued evaluating performance of the disposal cell cover and relatively low-cost methods for renovating conventional compacted soil layer covers into evapotranspiration covers.
- Green River, Utah—The revised Groundwater Compliance Action Plan (GCAP) remains pending NRC concurrence; subsequently, the LTSP will be revised to incorporate the accepted groundwater compliance strategy.
- Lakeview, Oregon—DOE continued to measure high percolation rates through the cover using water flux meters.
- Lakeview, Oregon—DOE continued riprap gradation monitoring to ensure compliance with minimum rock size requirement for disposal cell erosion protection.
- Lakeview, Oregon—NRC suspended review of the draft revised LTSP because the revised plan addressed riprap rock size, but not durability.
- Maybell, Colorado—DOE revised the LTSP and submitted it to NRC to reflect a correction made to the property boundary along the north and northwest portion of the site.
- Mexican Hat, Utah—DOE continues to observe seep flows in accordance with the revised LTSP.
- Mexican Hat, Utah—The seismic monitoring station installed on site in 2007, as part of the EarthScope USArray Project, continues to collect data.
- Naturita, Colorado—DOE installed pedestrian fence ladders at three key locations as a safety precaution.
- Naturita, Colorado—Based on the most recent groundwater sampling results (July 2008), DOE made a recommendation to discontinue groundwater monitoring at the site to NRC.
- Rifle, Colorado—DOE continues to remove pore water from the disposal cell; a second pump was installed in standpipe MW-03 to increase the flow rate.
- Rifle, Colorado—DOE continued land surveying of settlement plates and standpipes; results indicate that movement in the disposal cell cover is negligible and that downslope movement of the cell is not apparent at this time.
- Shiprock, New Mexico—DOE continues the study to determine the effect of plant encroachment on the disposal cell, and the need for continued vegetation control was evaluated.
- Shiprock, New Mexico—DOE continued research associated with cell performance and the collection of saturated hydraulic conductivity measurements.
- Shiprock, New Mexico—DOE continued research at phytoremediation test plots to evaluate the effectiveness of using phreatophytes for removing site legacy groundwater contamination.

- Slick Rock, Colorado—DOE replaced the culvert at the entrance gate near the country road with a larger-diameter culvert for better erosion control.
- Slick Rock, Colorado—DOE repaired two large gullies containing deep headcuts that had formed southwest of the retention pond.
- Tuba City, Arizona—DOE replaced all 30 perimeter signs.

Results of the annual site inspection, maintenance, and monitoring activities are reported in the site-specific chapters that follow. Actions and issues at each site are summarized in the following table, which includes an index number for each item that can be found in the left margin next to the corresponding text in the respective site chapter.

2008 Summary of UMTRCA Title I Site Actions and Issues

Site	Chapter	Page	Index No.	Actions and Issues
Ambrosia Lake, New Mexico	1	1–5 1–6	1A 1B	Minor settlement may be occurring on cell cover. Groundwater monitoring.
Burrell, Pennsylvania	2	2–2 2–5 2–5	2A 2B 2C	Maintenance: the entrance sign and four perimeter signs were replaced. Vegetation establishing on the disposal cell continues to be monitored in accordance with the LTSP. Beaver dam monitoring.
Canonsburg, Pennsylvania	3	3–2 3–5 3–5 3–5 3–6 3–6 3–7 3–8	3A 3B 3C 3D 3E 3F 3G 3H	Maintenance: well protective casings and bollards painted. Maintenance: control of noxious/invasive weeds. Maintenance: animal burrows on cell. Maintenance: riprap restoration in diversion channel. Maintenance: stream bank stabilization work complete. NRC concurred in the sale of the eastern portion of Tract 117. Groundwater monitoring. NRC concurred in the revised LTSP; monitoring program modifications will be implemented in 2009.
Durango, Colorado	4	4–2 4–5 4–6 4–7	4A 4B 4C 4D	Maintenance: entrance sign and two perimeter signs were replaced. Maintenance: vegetation control. Maintenance: vegetation control. Groundwater monitoring.
Falls City, Texas	5	5–1 5–2 5–5 5–6 5–14	5A 5B 5C 5D 5E	NRC concurred in the revised LTSP. Maintenance: minor fence repairs, perimeter sign replaced. Maintenance: vegetation control on the disposal cell. Groundwater monitoring. NRC concurred in the revised LTSP; monitoring program modifications implemented.
Grand Junction, Colorado	6	6–2 6–5 6–6 6–6 6–7	6A 6B 6C 6D 6E	Maintenance: replaced two perimeter signs. Cover renovation studies. Maintenance: south storm water collection ditch repaired and sediment removed from the collection pond. Maintenance: control of undesirable and invasive vegetation. Groundwater monitoring.
Green River, Utah	7	7–2 7–6 7–6 7–11 7–14	7A 7B 7C 7D 7E	Maintenance: replaced damaged perimeter signs. LTSP-required groundwater monitoring. GCAP-required groundwater monitoring; revision pending NRC concurrence. Groundwater-level monitoring. Surface water monitoring.
Gunnison, Colorado	8	8–2 8–2 8–5	8A 8B 8C	Maintenance: minor fence repairs. Maintenance: ten perimeter signs replaced. Maintenance: control of deep-rooted vegetation on the disposal cell.
Lakeview, Oregon	9	9–6 9–7 9–8	9A 9B 9C	Evaluation: disposal cell cover performance. NRC review of the revised LTSP suspended. Riprap gradation and durability monitoring.

Site	Chapter	Page	Index No.	Actions and Issues
Lowman, Idaho	10	10–5	10A	Maintenance: control of noxious weeds.
Maybell, Colorado	11	11–2 11–5 11–6 11–6	11A 11B 11C 11D	Maintenance: fence repairs. Property boundary error discovered; LTSP site map revised. Maintenance: weed control. Uranium exploration lode claim stake found on site.
Mexican Hat, Utah	12	12–6 12–6 12–8	12A 12B 12C	Maintenance: control of trash. Trespassing. Observation of seep flows.
Naturita, Colorado	13	13–2 13–2 13–2 13–6 13–7 13–9	13A 13B 13C 13D 13E 13F	Maintenance: erosion control, boulder removal along access road. Maintenance: fence repair. Maintenance: installation of new pedestrian fence ladders. Maintenance: noxious weed control. Groundwater monitoring. Evaluation: DOE to recommend termination of groundwater monitoring program.
Rifle, Colorado	14	14–5 14–7 14–8	14A 14B 14C	Surveying of settlement plates and standpipes. Monitoring: disposal cell pore water. Maintenance: installation of a second pump in standpipe MW–03.
Salt Lake City, Utah	15	15–2 15–2 15–5 15–6 15–6	15A 15B 15C 15D 15E	Site access requires escorted crossing of EnergySolutions-restricted areas under a Radiological Work Permit. Maintenance: fence repair. Maintenance: boundary monument uncovered. The site is surrounded by commercial radioactive-waste-disposal operations conducted by EnergySolutions. Removal of radiological postings.
Shiprock, New Mexico	16	16–2 16–5 16–5 16–6 16–6 16–6 16–6	16A 16B 16C 16D 16E 16F 16G	Maintenance: control of trash and tumbleweed accumulations. Maintenance: control of deep-rooted plants on cell. Research: evaluation of cover performance and the effects of deep-rooted vegetation. Maintenance: erosion control in the outlet channel. Maintenance: control of deep-rooted plants in outflow channel. Maintenance: control of noxious weeds. Research: phytoremediation studies.
Slick Rock, Colorado	17	17–2 17–5 17–6	17A 17B 17C	Maintenance: culvert replaced, access road erosion repaired. Maintenance: erosion control, gullies repaired. Maintenance: control of noxious weeds.
Spook, Wyoming	18	18–2	18A	Maintenance: the base of a site marker was repaired.
Tuba City, Arizona	19	19–2 19–2 19–5 19–5 19–6	19A 19B 19C 19D 19E	Maintenance: perimeter sign replacement. Maintenance: fence repairs. Maintenance: control of deep-rooted vegetation on cell. Maintenance: erosion control (gully stabilization). Groundwater monitoring.